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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,380	10/31/2003	Stephen M. Trimberger	X-1435 US	1825

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EXAMINER	
MORAN, RANDAL D	
ART UNIT	**PAPER NUMBER**
2135	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/714,380	TRIMBERGER, STEPHEN M.	
	Examiner	Art Unit	
	Randal D. Moran	2135	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/31/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-22 are pending in this application.

2. The IDS filed on 10/31/2003 has been considered by the examiner.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 20-22** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, as they do not fall under any of the statutory classes of inventions. The claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the mean of 35 USC §101. They are clearly not a series of steps or acts to be a process not are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1, 4-12, 14, 20-22**, are rejected under 35 U.S.C. 102(b) as being anticipated by **Garnett (US 6,356,637)**.

7. Considering **Claims 1, 9, and 12,** Garnett discloses a system of securely using decryption keys during Programmable Logic Device (PLD) configuration (abstract), comprises: a microcontroller for receiving an encrypted bitstream (Fig 1- item 3 and item 9); a key storage register coupled to the microcontroller for storing key data (Fig. 1- item 6, column 5- lines 19-30); a decryptor coupled to the key storage register, wherein only the decryptor can read from the key storage register (Fig. 1, Fig. 4- column 6- lines 50-52); and a configuration data register in the PLD, wherein the configuration data register cannot be read by the microcontroller after the decryptor is used (Fig. 1, Fig. 6- item 3 and item 17, column 5- lines 52-60, column 7- lines 5-13).

8. Considering **Claim 4,** Garnett discloses the decryptor is a software decryptor stored in a memory that uses hardware to enable access to the key storage register based on a memory address (column 4- lines 10-21).

9. Considering **Claims 5 and 10,** Garnett discloses the memory is a ROM having a decryption engine (column 2- lines 17-20).

10. Considering **Claims 6 and 11,** Garnett discloses the microcontroller further receives a configuration boot program along with the encrypted bitstream (Fig. 6- item 4).

11. Considering **Claim 7,** Garnett discloses the microcontroller, the key register, the decryptor, and the configuration data register are all within the PLD (Fig. 1, Fig. 6).

12. Considering **Claim 8,** Garnett discloses the microcontroller is an emulated microcontroller in the PLD (Fig. 6- item 3 and item 17).

13. Considering **Claim 14,** Garnett discloses the microcontroller can only be read by the configuration data register after the decryptor is used (column 6- lines 55-62).

14. Considering **Claim 20,** Garnett discloses a bitstream, comprising: a configuration boot program for running a microcontroller on a programmable logic device; and an encrypted bitstream portion of the bitstream containing encrypted configuration data for a configuration data register on the programmable logic device (Fig. 1- item 4 and item 9).

15. Considering **Claim 21,** Garnett discloses said configuration boot program comprises instructions for a decryptor (Fig. 4- item 40).

16. Considering **Claim 22,** Garnett discloses said configuration boot program comprises instructions for a decompressor (Fig. 1- item 3 and item 5).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. **Claims 2, 3, 13, and 15-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Garnett** in view of **Pang et al. (US 6,366,117),** hereafter "Pang."

19. Considering **Claim 2 and 13,** Garnett does not disclose the microcontroller stores key data in the key storage register, but the microcontroller cannot read from the key storage register.

Pang does disclose the microcontroller stores key data in the key storage register, but the microcontroller cannot read from the key storage register (Fig. 3- item 26 and item 29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Garnett by not allowing the microcontroller to read from the key storage register as taught by Pang in order to provide enhanced security against the loss of commercially valuable intellectual property (Garnett- abstract).

20. Considering **Claim 3,** the combination of Garnett and Pang discloses the decryptor is a hardware decryptor embedded in an integrated circuit along with the PLD (Garnett- column 2- lines 11-16, column 4- lines 10-21).

21. Considering **Claim 15,** the combination of Garnett and Pang discloses the microcontroller cannot read from the key register (Fig. 3- item 26 when removed).

22. Considering **Claim 16,** Garnett discloses only the decryptor can read from the key storage register (Fig. 4).

23. Considering **Claim 17,** Garnett discloses the steps of loading the decryptor with data from key register and loading the decryptor with data from the microcontroller comprises using a predetermined instruction enabling access to the key~ storage register based on a known address of a memory storing a decryption engine forming the decryptor (Fig. 4, column 4- lines 10-21).

24. Considering **Claim 18,** Garnett discloses a system of securely using decryption keys during programmable logic device configuration (abstract), comprises: a memory-mapped key register coupled to a microcontroller data bus (Fig. 6- item 3 and item 6); a decryptor engine stored in non-volatile memory and coupled to the microcontroller data bus (Fig. 4);

Garnett does not disclose logic circuitry limiting access to the key register from the microcontroller data bus using specified addresses of the non-volatile memory.

Pang does disclose logic circuitry limiting access to the key register from the microcontroller data bus using specified addresses of the non-volatile memory (Fig. 3- item 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Garnett by limiting logic curcuitry as taught by Pang in order to provide enhanced security against the loss of commercially valuable intellectual property (Garnett- abstract).

25. **Claim 19 is** rejected under 35 U.S.C. 103(a) as being unpatentable over **Garnett** and **Pang** in view of **Kuranaga (US 5,409,661).**

26. Considering **Claim 19,** the combination of Garnett and Pang does not disclose the logic circuitry uses specified addresses of the non-volatile memory by limiting access to minimum and maximum ROM memory addresses using a microcontroller program counter.

Kuranaga does disclose the logic circuitry uses specified addresses of the non-volatile memory by limiting access to minimum and maximum ROM memory addresses using a microcontroller program counter (column 6- lines 56-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Garnett and Pang by logic circuitry that uses specified addresses of the non-volatile memory by limiting access to minimum and maximum ROM memory addresses using a

microcontroller program counter as taught by Kuranaga in order to provide enhanced security against the loss of commercially valuable intellectual property (Garnett- abstract).

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 6,118,869- PLD bitstream encryption
- US 5,388,157- arrangements for semiconductor programmable devices
- US 2001/0032318- protecting configuration data in a PLD

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randal D. Moran whose telephone number is 571-270-1255. The examiner can normally be reached on M-F: 7:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on 571-272-3859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Randal D. Moran
RDM
3/15/07

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